A Diſcourſe
OF A
METHOD
For the well guiding of
REASON,
And the Diſcovery of *Truth*
In the
SCIENCES.

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MDC XLIX.

To the *Understanding READER.*

THE Great DES CARTES (who may justly challenge the first place amongst the Philosophers of this Age) is the Author of this Discourse; which in the Originall was so well known, That it could be no mans but his own, that his Name

was

was not affix'd to it: I need ſay no more either of Him or It; He is beſt made known by Himſelf, and his Writings want nothing but thy reading to commend them. But as thoſe who cannot compaſſe the Originals of *Titian* and *Van-Dyke*, are glad to adorne their Cabinets with the Copies of them; So be pleaſed favourably to receive his Picture from my hand, copied after his own Deſigne: You may therein obſerve the lines of a well form'd Minde, The hightnings of Truth, The ſweetnings and ſhadowings of Probabilities, The falls and depths of Falſhood; all which ſerve to perfect this Maſterpiece.

piece. Now although my after-draught be rude and unpoliſhed, and that perhaps I have touch'd it too boldly, The thoughts of ſo clear a Minde, being ſo extremely fine, That as the choiſeſt words are too groſſe, and fall ſhort fully to expreſſe ſuch ſublime Notions; So it cannot be, but being tranſveſted, it muſt neceſſarily loſe very much of its native Luſtre: Nay, although I am conſcious (notwithſtanding the care I have taken neither to wrong the Authours Senſe, nor offend the Readers Ear) of many eſcapes which I have made; yet I ſo little doubt of being excuſed, That I am confident, my endeavour

vour cannot but be gratefull to all Lovers of Learning; for whoſe benefit I have Engliſhed, and to whom I addreſſe this Eſſay, which contains a Method, by the Rules whereof we may Shape our better part, Rectifie or Reaſon, Form our Manners and Square our Actions, Adorn our Mindes, and making a diligent Enquiry into Nature, wee may attain to the Knowledge of the Truth, which is the moſt deſirable union in the World.

Our Authour alſo invites all letterd men to his aſſiſtance in the proſecution of this Search; That for the good of Mankinde, They would practiſe and communi-

municate Experiments, for the uſe of all thoſe who labour for the perfection of Arts and Sciences : Every man now being obliged to the furtherance of ſo beneficiall an Undertaking, I could not but lend my hand to open the Curtain, and diſcover this New Model of Philoſophy ; which I now publiſh, neither to humour the preſent, nor diſguſt former times ; but rather that it may ſerve for an innocent Divertiſement to thoſe, who would rather Reform themſelves, then the reſt of the world; and who, having the ſame ſeeds and grounds, and knowing That there is nothing New under the Sun ; That Novelty is but Oblivion,

livion, and that Knowledge is but Remembrance, will ſtudy to finde out in themſelves, and reſtore to Poſterity thoſe loſt Arts, which render Antiquity ſo venerable; and ſtrive (if it be poſſible) to go beyond them in other things, as well as Time: Who minde not thoſe things which are above, beyond, or without them; but would rather limit their deſires by their power, then change the Courſe of Nature; Who ſeek the knowledge, and labour for the Conqueſt of themſelves; Who have Vertue enough to make their own Fortune; And who prefer the Culture of the Minde before the Adorning of the Bo-

dy;

dy; To ſuch as theſe I preſent this Diſcourſe (whoſe pardon I beg, for having ſo long detain'd them from ſo deſirable a Converſation;) and conclude with this Advice of the Divine *Plato*:

Cogita in te, præter Animum, nihil eſſe mirabile.

A DISCOURSE OF A METHOD,

For the wel-guiding of REASON;

AND

The discovery of TRUTH in the SCIENCES.

IF this Discourse seem too long to be read at once, it may be divided into six parts. In the first, are divers Considerations touching the Sciences. In the second, the principall Rules of that Method which the Author hath studyed. In the third, some of those in morality, which he hath drawn from this Method. In the fourth, the reasons whereby the existence of God and of the humane Soul is proved; which

are the grounds of his Metaphysicks. In the fift, the order of these Physicall questions, which he hath examined, and particularly the explication of the hearts motion; with some other difficulties relating to Physick; as also the difference between our Souls and those of beasts. In the last, what he conceives requisit to make a further inquiry into Nature, then hath hitherto been made. And what reasons induc'd him to write.

PART. I.

RIght understanding is the most equally divided thing in the World; for every one beleevs himself so well stor'd with it, that even those who in all other things are the hardest to be pleas'd, seldom desire more of it then they have; wherein it is not likely that all

Men

Men are deceived: But it rather witneſſeth, That the faculty of right-judging and diſtinguiſhing truth from falſhood (which is properly call'd, Underſtanding or Reaſon) is naturally equal in all Men. And as the diverſity of our Opinions, is not, becauſe ſome are more reaſonable then others; but only that we direct our thoughts ſeveral ways, neither do we conſider the ſame things. For 'tis not enough to have good faculties, but the principal is, to apply them well. The greateſt Souls are as capable of the greateſt Vices, as of the moſt eminent Vertues: And thoſe who move but very ſlowly, may advance much farther, if they always follow the right way; then thoſe who run and ſtraggle from it.

For my part, I never preſum'd that my Minde was more perfect in any thing then an ordinary Mans; nay, I have often wiſh'd to have had my thoughts as quick, my imagination as clear and diſtinct, and my memory as

large and as ready as ſome other Men have had. And I know no Qualities which ſerve more then thoſe to the perfection of the Minde; for as for Reaſon or Underſtanding, foraſmuch as it is the only thing which makes us Men, and diſtinguiſheth us from beaſts, I will beleeve it to be entire in every One, and follow herein the common opinion of the Philoſophers, who ſay, That there is only more or leſs among the Accidents, and not amongſt the Forms or nature of the Individuals of one ſpecies.

But I ſhall not ſtick to ſay, That I beleeve my ſelf very happy, in having encountred from my youth with certain ways which have led me to conſiderations and Maximes, from which I have found a Method; whereby methinks, I have the means by degrees to augment my knowledg, and by little and little to raiſe it up to the higheſt pitch, whereto the meaneſs of my capacity, & the ſhort courſe of my life can permit it to attain. For I have

already

already reaped ſuch fruits from it, that although in the judgment I make of my ſelf, I endevour always rather to incline to miſtruſt, then to preſumption. And looking on the divers actions and undertakings of all Men, with the eye of a Philoſopher, there is almoſt none which to me ſeems not vain and uſeleſs. Yet I am extremely ſatisfied with the Progreſs, which (as it ſeems to me) I have already made in the ſearch of Truth, and do conceive ſuch hopes for the future, That if among the employments of Men, purely Men, there is any ſolidly good, and of importance, I dare beleeve it is that which I have choſen: Yet it may be that I deceive my ſelf, and perhaps it is but a little Copper and Glaſs which I take for Gold and Diamonds. I know how ſubject we are to miſtake in thoſe things which concern us, and how jealous we ought to be of the judgment of our friends, when it is in our favor. But I ſhould willingly in this Diſcourſe, trace out unto you the

ways which I have followed, and repreſent therein my life, as in a Picture, to the end, that every one may judge thereof; and that learning from common Fame, what mens opinions are of it, I may finde a new means of inſtructing my ſelf; which I ſhall add to thoſe which I cuſtomarily make uſe of.

Neither is it my deſign to teach a Method which every Man ought to follow, for the good conduct of his reaſon; but only to ſhew after what manner I have endevoured to order mine own. Thoſe who undertake to give precepts, ought to eſteem themſelves more able, then thoſe to whom they give them, and are blame-worthy, if they fail in the leaſt. But propoſing this but as a Hiſtory, or if you will have it ſo, but as a Fable; wherein amongſt other examples, which may be imitated, we may perhaps find divers others which we may have reaſon to decline: I hope it will be profitable to ſome, without

without being hurtfull to any; and that the liberty I take will be grateful to all.

I have been bred up to Letters from mine infancy; & becauſe I was perſwaded, that by their means a man might acquire a clear and certain knowledg of all that's uſefull for this life, I was extremely deſirous to learn them: But as ſoon as I had finiſh'd all the courſe of my Studies, at the end whereof Men are uſually receiv'd amongſt the rank of the learned. I wholly changed my opinion, for I found my ſelf intangled in ſo many doubts and errors, that me thought I had made no other profit in ſeeking to inſtruct my ſelf, but that I had the more diſcovered mine own ignorance. Yet I was in one of the moſt famous Schools in *Europe*; where I thought, if there were any on earth, there ought to have been learned Men. I had learnt all what others had learnt; even unſatisfied with the Sciences which were taught us, I had read over all

Books (which I could possibly procure) treating of such as are held to be the rarest and the most curious. Withall, I knew the judgment others made of me; and I perceiv'd that I was no less esteem'd then my fellow Students, although there were some amongst them that were destin'd to fill our Masters rooms. And in fine, our age seem'd to me as flourishing and as fertile of good Wits, as any of the preceding, which made me take the liberty to judg of all other men by my self, and to think, That there was no such learning in the world, as formerly I had been made beleeve.

Yet did I continue the esteem I had of those exercises which are the employments of the Schools: I knew that Languages which are there learnt, are necessary for the understanding of ancient Writers, That the quaintness of Fables awakens the Minde; That the memorable actions in History raise it up, and that being read with discretion, they help to form the judgment.

That

That the reading of good books, is like the converſation with the honeſteſt perſons of the paſt age, who were the Authors of them, and even a ſtudyed converſation, wherein they diſcover to us the beſt only of their thoughts. That eloquence hath forces & beauties which are incomparable. That Poetry hath delicacies and ſweets extremly raviſhing; That the Mathematicks hath moſt ſubtile inventions, which very much conduce aſwel to content the curious, as to facilitate all arts, and to leſſen the labour of Men: That thoſe writings which treat of manners contain divers inſtructions, and exhortations to vertue, which are very uſefull. That Theology teacheth the way to heaven; That Philoſophy affords us the means to ſpeake of all things with probability, and makes her ſelf admir'd, by the leaſt knowing Men. That Law, Phyſick and other ſciences bring honor and riches to thoſe who practice them; Finally that its good to have examin'd them

all

all even the falſeſt and the moſt ſuperſtitious, that we may diſcover their juſt value, and preſerve our ſelves from their cheats.

But I thought I had ſpent time enough in the languages, and even alſo in the lecture of ancient books, their hiſtories and their fables. For 'tis even the ſame thing to converſe with thoſe of former ages, as to travel. Its good to know ſomething of the manners of ſeverall Nations, that we may not think that all things againſt our *Mode* are ridiculous or unreaſonable, as thoſe are wont to do, who have ſeen Nothing. But, when we employ too long time in travell, we at laſt become ſtrangers to our own Country, and when we are too curious of thoſe things, which we practiſed in former times, we commonly remain ignorant of thoſe which are now in uſe. Beſides, Fables make us imagine divers events poſſible, which are not ſo: And that even the moſt faithfull Hiſtories, if they neither change or aug-

augment the value of things, to render them the moreworthy to be read, at leaſt, they always omit the baſeſt and leſs remarkable circumſtances; whence it is, that the reſt ſeems not as it is; and that thoſe who form their Manners by the examples they thence derive, are ſubject to fall into the extravagancies of the *Paladins* of our Romances, and to conceive deſignes beyond their abilities.

I highly priz'd Eloquence, and was in love with Poetry; but I eſteem'd both the one and the other, rather gifts of the Minde, then the fruits of ſtudy. Thoſe who have the ſtrongeſt reaſoning faculties, and who beſt digeſt their thoughts, to render them the more clear and intelligible, may always the better perſwade what they propoſe, although they ſhould ſpeak but a corrupt dialect, and had never learnt Rhetorick: And thoſe whoſe inventions are moſt pleaſing, and can expreſs them with moſt ornament and ſweetneſs, will ſtill be the beſt

Poets,

Poets, although ignorant of the Art of Poetry.

Beyond all, I was moſt pleaſ'd with the Mathematicks, for the certainty and evidence of the reaſons thereof; but I did not yet obſerve their true uſe, and thinking that it ſerved only for Mechanick Arts; I wondred, that ſince the grounds thereof were ſo firm and ſolid, that nothing more ſublime had been built thereon. As on the contrary, I compar'd the writings of the Ancient heathen which treated of Manners, to moſt proud and ſtately Palaces which were built only on ſand and mire, they raiſe the vertues very high, and make them appear eſtimable above all the things in the world; but they doe not ſufficiently inſtruct us in the knowledg of them, and often what they call by that fair Name, is but a ſtupidneſs, or an act of pride, or of deſpair, or a paricide.

I reverenc'd our Theology, and pretended to heaven as much as any; But having learnt as a moſt certain

Truth,

Truth, that the way to it, is no leſs open to the moſt ignorant, then to the moſt learned; and that thoſe revealed truths which led thither, were beyond our underſtanding, I durſt not ſubmit to the weakneſs of my ratiocination. And I thought, that to undertake to examine them, and to ſucceed in it, requir'd ſome extraordinary aſſiſtance from heaven, and ſomewhat more then Man. I ſhall ſay nothing of Philoſophy, but that ſeeing it hath been cultivated by the moſt excellent wits, which have liv'd theſe many ages, and that yet there is nothing which is undiſputed, and by conſequence, which is not doubtfull. I could not preſume ſo far, as to hope to ſucceed better then others. And conſidering how many different opinions there may be on the ſame thing, maintain'd by learned Men, and yet that there never can be but one only Truth, I reputed almoſt all falſe, which had no more then probability in it.

As

As for other Sciences, ſince they borrow their Principles from Philoſophy, I judg'd that nothing which was ſolid could be built upon ſuch unſound foundations; and neither honour nor wealth were ſufficient to invite me to the ſtudy of them. For (I thank God) I found not my ſelf in a condition which obliged me to make a Trade of Letters for the relief of my fortune. And although I made it not my profeſſion to deſpiſe glory with the Cynick; yet did I little value that which I could not acquire but by falſe pretences. And laſtly, for unwarrantable Studies, I thought I already too well underſtood what they were, to be any more ſubject to be deceived, either by the promiſes of an Alchymiſt, or by the predictions of an Aſtrologer, or by the impoſtures of a Magician, or by the artifice or brags of thoſe who profeſs to know more then they do.

By reaſon whereof, as ſoon as my years freed me from the ſubjection of my

my Tutors, I wholly gave over the ſtudy of Letters, and reſolving to ſeek no other knowledge but what I could finde in my ſelf, or in the great book of the World, I imployed the reſt of my youth in Travell, to ſee Courts and Armies, to frequent people of ſeverall humors and conditions, to gain experience, to hazard my ſelf in thoſe encounters of fortune which ſhould occurr; and every-where to make ſuch a reflection on thoſe things which preſented themſelves to me, that I might draw profit from them. For (me thought) I could meet with far more truth in the diſcourſes which every man makes touching thoſe affairs which concern him, whoſe event would quickly condemn him, if he had judg'd amiſſe; then amongſt thoſe which letter'd Men make in their cloſets touching ſpeculations, which produce no effect, and are of no conſequence to them, but that perhaps they may gain ſo much the more vanity, as they are farther different from

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the common underſtanding : Foraſ-much as he muſt have imployed the more wit and ſubtilty in endeavouring to render them probable. And I had always an extreme deſire to learn to diſtinguiſh Truth from Falſhood, that I might ſee cleerly into my actions, and paſſe this life with aſſurance.

Its true, that whiles I did but conſider the Manners of other men, I found little or nothing wherein I might confirm my ſelf : And I obſerv'd in them even as much diverſity as I had found before in the opinions of the Philoſophers : So that the greateſt profit I could reap from them was, that ſeeing divers things, which although they ſeem to us very extravagant and ridiculous, are nevertheleſſe commonly received and approved by other great Nations, I learn'd to beleeve nothing too firmly, of what had been onely perſwaded me by example or by cuſtom, and ſo by little and little I freed my ſelf from many errors, which might eclipſe our natu-

naturall light, and render us leſſe able to comprehend reaſon. But after I had imployed ſome years in thus ſtudying the Book of the World, and endeavouring to get experience, I took one day a reſolution to ſtudy alſo within my ſelf, and to employ all the forces of my minde in the choice of the way I was to follow: which (me thought) ſucceeded much better, then if I had never eſtranged my ſelf from my Country, or from my Books.

PART. II.

I Was then in *Germany*, whither the occaſion of the Wars (which are not yet finiſhed) call'd me; and as I return'd from the Emperors Coronation towards the Army, the beginning of Winter ſtopt me in a place, where finding no converſation to divert me

and on the other ſides having by good fortune no cares nor paſſions which troubled me, I ſtayd alone the whole day, ſhut up in my Stove, where I had leaſure enough to entertain my ſelf with my thoughts. Among which one of the firſt was that I betook my ſelf to conſider, That oft times there is not ſo much perfection in works compos'd of divers peeces, and made by the hands of ſeverall maſters, as in thoſe that were wrought by one only: So we may obſerve that thoſe buildings which were undertaken and finiſhed by one onely, are commonly fairer and better ordered then thoſe which divers have laboured to patch up, making uſe of old wals, which were built for other purpoſes: So thoſe ancient Cities which of borough, became in a ſucceſſion of time great Towns, are commonly ſo ill girt in compariſon of other regular Places, which were deſign'd on a flatt according to the fancy of an Engeneer; and although conſidering their buildings

ings ſeverally, we often find as much or more art, then in thoſe of other places; Yet to ſee how they are rank'd here a great one, there a little one, and how they make the ſtreets crooked and uneven, One would ſay, That it was rather Fortune, then the will of Men indued with reaſon, that had ſo diſpoſed them. And if we conſider, that there hath always been certain Officers, whoſe charge it was, to take care of private buildings, to make them ſerve for the publique ornament; We may well perceive, that it's very difficu't, working on the works of others, to make things compleat. So alſo did I imagine, that thoſe people who formerly had been half wilde, and civiliz'd but by degrees, made their laws but according to the incommodities which their crimes and their quarrels conſtrain'd them to, could not be ſo wel pollic'd, as thoſe who from the beginning of their aſſociation, obſerv'd the conſtitutions of ſome prudent Legiſlator.

As it is very certain, that the ſtate of the true Religion, whoſe Ordinances God alone hath made, muſt be incomparably better regulated then all others. And to ſpeak of humane things, I beleeve that if *Sparta* hath formerly been moſt flouriſhing, it was not by reaſon of the goodneſs of every of their laws in particular, many of them being very ſtrange, and even contrary to good manners, but becauſe they were invented by one only, They all tended to One End. And ſo I thought the ſciences in Books, at leaſt thoſe whoſe reaſons are but probable, and which have no demonſtrations, having been compos'd of, and by little and little enlarg'd with, the opinions of divers perſons, come not ſo near the Truth, as thoſe ſimple reaſonings which an underſtanding Man can naturally make, touching thoſe things which occurr. And I thought beſides alſo, That ſince we have all been children, before we were Men; and that we muſt

must have been a long time govern'd by our appetites, and by our Tutors, who were often contrary to one another, and neither of which alwayes counsel'd us for the best; It's almost impossible that our judgment could be so clear or so solid, as it might have been, had we had the intire use of our reason from the time of our birth, and been always guided by it alone.

Its true, we doe not see the houses of a whole Town pull'd down purposely to re build them of another fashion; and to make the streets the fairer; But we often see, that divers pull their own down to set them up again, and that even sometimes they are forc'd thereunto, when they are in danger to fall of themselves, and that their foundations are not sure. By which example I perswaded my self, that there was no sense for a particular person, to design the Reformation of a State, changing all from the very foundations, and subverting

all to redreſs it again: Nor even alſo to reform the bodies of Sciences, or the Orders already eſtabliſhed in the Schools for teaching them. But as for all the Opinions which I had till then receiv'd into my beleef, I could not doe better then to undertake to expunge them once for all, that afterwards I might place in their ſtead, either others which were better, or the ſame again, as ſoon as I ſhould have adjuſted them to the rule of reaſon. And I did confidently beleeve, that by that means I ſhould ſucceed much better in the conduct of my life, then if I built but on old foundations, and only relyed on thoſe principles, which I ſuffer'd my ſelf to be perſwaded to in my youth, without ever examining the Truth of them. For although I obſerv'd herein divers difficulties, yet were they not without cure, nor comparable to thoſe which occurr in the reformation of the leaſt things belonging to the publick: theſe great bodies are too unweldy to be rais'd, being caſt

caſt down, or to be held up when they are ſhaken, neither can their falls be but the heavyeſt.

As for their imperfections, if they have any, as the only diverſity which is amongſt them, is ſufficient to aſſure us that many have. Cuſtome hath (without doubt) much ſweetned them, and even it hath made others wave, or inſenſibly correct a many, whereto we could not ſo well by prudence have given a remedy. And in fine, They are alwayes more ſupportable, then their change can be, Even, as the great Roads, which winding by little and little betwixt mountains, become ſo plain and commodiou , with being often frequented, that it's much better to follow them, then to undertake to goe in a ſtrait line by climbing over the rocks, and deſcending to the bottom of precipices. Wherefore I can by no means approve of thoſe turbulent and unquiet humors, who being neither call'd by birth or fortune to the

managing of publique affairs, yet are alwayes forming in *Idea*, ſome new Reformation. And did I think there were the leaſt thing in this Diſcourſe, which might render me ſuſpected of that folly, I ſhould be extremely ſorry to ſuffer it to be publiſhed; I never had any deſigne which intended farther then to reform my own thoughts and to build on a foundation which was wholly mine. But though I preſent you here with a Modell of my work, becauſe it hath ſufficiently pleaſed me; I would not therefore counſell any one to imitate it. Thoſe whom God hath better endued with his graces, may perhaps have more elevated deſignes; but I fear me, leſt already this be too bold for ſome. The reſolution only of quitting all thoſe opinions which we have formerly receiv'd into our belief, is not an example to be followed by every One; and the world is almoſt compos'd but of two ſorts of Men, to whom it's no wayes convenient, to wit,

wit, of thoſe, who beleeving themſelves more able then they are, cannot with-hold themſelves from precipitating their judgments, nor have patience enough to ſteer all their thoughts in an orderly courſe. Whence it happens, that if they ſhould once take the liberty to doubt of thoſe principles which they have already received, and to ſtray from the common road, they could never keep the path which leads ſtrait forwards, and ſo, would ſtraggle all their lives. And of ſuch who having reaſon and modeſty enough to judg that they are leſs able to diſtinguiſh truth from falſhood then others, from whom they may receive inſtruction, ought much rather to be content to follow other Mens opinions, rather then to ſeek after better themſelves.

And for my part, I had undoubtedly been of the number of thoſe latter, had I never had but one Maſter, or had I not known the diſputes which have

have alwayes hapned amongſt the moſt learned. For having learnt from the very School, That one can imagin nothing ſo ſtrange or incredible, which had not been ſaid by ſome one of the Philoſophers; And having ſince obſerv'd in my travails, That all thoſe whoſe opinions are contrary to ours, are not therefore bárbarous or ſavage, but that many uſe as much or more reaſon then we; and having conſider'd how much one Man with his own underſtanding, bred up from his childhood among the French or the Dutch, becomes different from what he would be, had he alwayes liv'd amongſt the *Chineſes*, or the *Cannibals*: And how even in the faſhion of our Clothes, the ſame thing which pleas'd ten years ſince, and which perhaps wil pleaſe ten years hence, ſeems now to us ridiculous and extravagant. So that it's much more Cuſtome and Example which perſwades us, then any aſſured knowledg; and notwithſtanding that plurality of voices is a

proof

proof of no validity, in those truths which are hard to be discovered; for that it's much more likely for one man alone to have met with them, then a whole Nation; I could choose no Man whose opinion was to be preferr'd before anothers: And I found my self even constrain'd to undertake the conduct of my self.

But as a man that walks alone, and in the dark, I resolv'd to goe so softly, and use so much circumspection in all things, that though I advanc'd little, I would at least save my self from falling. Neither would I begin quite to reject, some opinions, which formerly had crept into my belief, without the consent of my reason, before I had employed time enough to form the project of the work I undertook, and to seek the true Method to bring me to the knowledg of all those things, of which my understanding was capable.

I had a little studyed, being young, of the parts of Philosophy, Logick, and

and of the Mathematicks, the Analyſis of the Geometricians, and *Algebra*: Three arts or ſciences which ſeem'd to contribute ſomewhat conducing to my deſigne: But examining them, I obſerv'd, That as for Logick, its Syllogiſms, and the greateſt part of its other Rules, ſerve rather to expound to another the things they know, or even as *Lullies* art, to ſpeak with judgment of the things we are ignorant of, then to learn them. And although in effect it contain divers moſt true and good precepts, yet there are ſo many others mixed amongſt them, either hurtfull or ſuperfluous, That it's even as difficult to extract them, as 'tis to draw a *Diana* or a *Mercury* out of a lump of Marble, which is not yet rough-hewn; as for the Analyſis of the Ancients, and the *Algebra* of the Moderns; beſides that, they extend only to matters very abſtract, and which ſeem to be of no uſe; The firſt being alwayes ſo tyed to the conſideration of figures, That it cannot exerciſe

ciſe the underſtanding, without very much tiring the imagination. And in the latter they have ſo ſubjected themſelves to certain Rules and cyphers, that they have made a confus'd and obſcure Art which perplexeth the minde, in ſtead of a Science to inſtruct it. For this reaſon, I thought I ought to ſeek ſome other Method, which comprehending the advantages of theſe, they might be exempt from their defects. And as the multitude of Laws often furniſheth excuſes for vice; ſo a State is fair better polic'd, when having but a few, they are very ſtrictly obſerv'd therein: So, inſtead of the great many precepts whereof Logick is compos'd, I thought theſe four following would be ſufficient for me, if I took but a firm and conſtant reſolution not once to fail in the obſervation of them.

The firſt was, never to receive any thing for true, but what I evidently knew to be ſo; that's to ſay, Carefully to avoid Precipitation and Prevention,

tion, and to admit nothing more into my judgment, but what ſhould ſo clearly and diſtinctly preſent it ſelf to my minde, that I could have no reaſon to doubt of it.

The ſecond, to divide every One of theſe difficulties, which I was to examine into as many parcels as could be, and, as was requiſite the better to reſolve them.

The third, to lead my thoughts in order, beginning by the moſt ſimple objects, and the eaſieſt to be known; to riſe by little and little, as by ſteps, even to the knowledg of the moſt n xt; and even ſuppoſing an Order among thoſe which naturally doe not precede one the other.

And the laſt, to make every where ſuch exact calculations, and ſuch generall reviews, That I might be confident to have omitted Nothing.

Thoſe long chains of reaſons, (though ſimple and eaſie) which the Geometricians commonly uſe to lead us to their moſt difficult demon-

monſtrations, gave me occaſion to imagine, That all things which may fall under the knowledg of Men, follow one the other in the ſame manner, and ſo we doe only abſtain from receiving any one for true, which is not ſo, and obſerve alwayes the right order of deducing them one from the other, there can be none ſo remote, to which at laſt we ſhall not attain; nor ſo hid, which we ſhall not diſcover. Neither was I much troubled to ſeek by which it behooved me to begin, for I already knew, that it was by the moſt ſimple, and the eaſieſt to be diſcern'd. But conſidering, that amongſt all thoſe who formerly have ſought the Truth in Learning, none but the Mathematicians only could finde any demonſtrations, that's to ſay, any certain and evident reaſons. I doubted not, but that it was by the ſame that they have examin'd; although I did hope for no other profit, but only that they would accuſtome my Minde to nouriſh it ſelf with

Truths,

Truths, and not content it self with false Reasons. But for all this, I never intended to endevour to learn all those particular Sciences which we commonly call'd Mathematicall: And perceiving, that although their objects were different, yet did they nevertheless agree altogether, in that they consider no other thing, but the divers relations or proportions which are found therein; I thought it therefore better to examine those proportions in generall, and without supposing them but in those subjects, which might the more easily serve to bring me to the knowledg of them. But withall, without any wayes limiting them, That I might afterwards the better fit them to all others whereto they might be applyed. Having also observ'd, That to know them, it would be sometimes needfull for me to consider every one in particular, or sometimes only to restrain them, or comprehend many together; I thought, that to consider them the better

better in particular I ought to ſuppoſe them in lines, for as much as I find nothing more ſimple, nor which I could more diſtinctly repreſent to my imagination, and to my ſences; But to hold or comprehend many in one, I was oblig'd to explain them by certain Cyphers the ſhorteſt I poſſibly could, and that I ſhould thereby borrow the beſt of the Geometricall Analyſis, and of Algebra, & ſo correct all the defects of the one by the other.

As in effect I dare ſay, That the exact obſervation of thoſe few precepts I had choſen, gave me ſuch a facility to reſolve all the queſtions whereto theſe two ſciences extend; That in two or three months ſpace which I employed in the examination of them, having begun by the moſt ſimple and moſt generall, and every Truth which I found being a rule which afterwards ſerved me to diſcover others; I did not only compaſſe divers truths which I had formerly judged moſt difficult, But me thought alſo that towards the end I could de-

termin even in those which I was ignorant of, by what means and how farr it was possible to resolve them. Wherein perhaps I shall not appear to be very vain if you consider, That there being but one truth of every thing, whoever finds it, knows as much of it as one can know; And that for example a child instructed in Arithmatick having made an addition according to his rules, may be sure to have found, touching the sum he examined, all what the wit of man could finde out. In a word the method which teacheth to folow a right order, and exactly to enumerate all the circumstances of what we seek, contains, whatsoever ascertains the rules of Arithmatick.

But that which pleas'd me most in this Method was the assurance I had, wholly to use my reason, if not perfectly, at least as much as it was in my power; Besides this, I perceived in the practice of it, my minde by little and little accustom'd it self to conceive its objects more clearly and distinctly; and having not subjected it

to

to any particular matter, I promiſed my ſelf to apply it alſo as profitable to the difficulties of other ſciences as I had to Algebra: Not that I therefore durſt at firſt undertake to examine all which might preſent themſelves, for that were contrary to the order it preſcribes. But having obſerv'd that all their principles were to be borrowed from Philoſophy, in which I had yet found none that were certain, I thought it were needfull for me in the firſt place to endevor to eſtabliſh ſome, and that this being the moſt important thing in the world, wherein precipitation and prevention were the moſt to be feared, I ſhould not undertake to performe it, till I had attain'd to a riper Age then XXIII. which was then mine. Before I had formerly employed a long time in preparing my ſelf thereunto, aſwel in rooting out of my minde all the ill opinions I had before that time received, as in getting a ſtock of experience to ſerve afterwards for the ſubject of my reaſonings, and in exerciſing my ſelf

always in the Method I had prescribed. That I might the more and more confine my self therein.

PART. III.

But as it is not enough to pull down the house where we dwell, before we begin to re-edify it, and to make provision of materials and architects, or performe that office our selves; nor yet to have carefully laid the design of it; but we must also have provided our selves of some other place of abode during the time of the rebuilding: So that I might not remain irresolute in my actions, while reason would oblige me to be so in my judgments, and that I might continue to live the most happily I could, I form'd for my own use in the interim a Moral, which consisted but of three or four Maximes, which I shall communicate unto you.

The

The first was to obey the lawes and cuſtomes of my Country, conſtantly adhæring to that Religion wherein by the grace of God I had from mine infancy bin bred. And in all other things behaving my ſelf according to the moſt moderate opinions and thoſe which were fartheſt from exceſſe, which were commonly received in practice by the moſt judicious Men, amongſt whom I was to live: For beginning from that very time, to reckon mine own for nothing, becauſe I could bring them all to the teſt, I was confident I could not do better then follow thoſe of the deepeſt ſenſe; and although perhaps there are as underſtanding men amongſt the Perſians or Chineſes as amongſt us, yet I thought it was more fit to regulate my ſelf by thoſe with whom I was to live, and that I might truly know what their opinions were, I was rather to obſerve what they practic'd, then what they taught. Not only by reaſon of the corruption of our manners, there are but few

who

who will ſay, all they beleeve, but alſo becauſe divers are themſelves ignorant of it; for the act of the thought by which we beleeve a thing, being different from that whereby we know that we believe it, the one often is without the other. And amongſt divers opinions equally receiv'd, I made choiſe of the moſt moderate only, as well becauſe they are always the moſt fit for practice, and probably the beſt, all exceſs being commonly ill; As alſo that I might leſs err from the right way, if I ſhould perhaps miſs it, then if having choſen one of the extremes, it might prove to be the other, which I ſhould have followed. And particularly I plac'd amongſt extremities, all thoſe promiſes by which we ſomwhat reſtrain our liberty. Not that I diſapproved the laws, which to cure the inconſtancy of weak minds, permit us when we have any good deſign, or elſe for the preſervation of Commerce, one that is but indifferent, to make vows or contracts, which oblige

us to perſevere in them: But becauſe I ſaw nothing in the world remain always in the ſame ſtate; and for mine own particular, promiſed my ſelf to perfect more and more my judgment, and not to impair it, I ſhould have thought my ſelf guilty of a great fault againſt right underſtanding, if becauſe I then approved any thing, I were alſo afterwards oblig'd to take it for good, when perhaps it ceaſed to be ſo, or that I had ceaſed to eſteem it ſo.

My ſecond Maxime was, To be the moſt conſtant and reſolute in my actions that I could; and to follow with no leſs perſeverance the moſt doubtfull opinions, when I had once determined them, then if they had been the moſt certain. Imitating herein Travellers, who having loſt their way in a Forreſt, ought not to wander, turning now this way, and then that, and leſs to abide in one place; but ſtil advance ſtraight forwards, towards one way, and not to change on ſlight occaſions, although perhaps at firſt Chance only

mov'd them to determine that choice: For by that means, if they do not go directly whither they desire, they will at least arrive somewhere where they will probably be better then in the midst of a Forrest. So the actions of this life admitting often of no delay, its a most certain Truth, That when it is not in our power to discern the truest opinions, we are to follow the most probable: Yea, although we finde no more probability in the one then in the other, we yet ought to determine some way, considering them afterwards no more as doubtful in what they relate to practice; but as most true and certain; forasmuch as the reason was so, which made us determine it. And this was sufficient for that time to free me from all the remorse and repentance which useth to perplex the consciences of those weak and staggering minds, which inconstantly suffer themselves to passe to the practice of those things as good, which they afterwards judge evill.

My

My third Maxime was, To endevour always rather to conquer my ſelf then Fortune; and to change my deſires, rather then the order of the world: and generally to accuſtome my ſelf to beleeve, That there is nothing wholly in our power but our thoughts; ſo that after we have done our beſt, touching things which are without us, all whats wanting of ſucceſs in reſpect of us is abſolutely impoſſible. And this alone ſeem'd ſufficient to hinder me from deſiring any thing which I could not acquire, and ſo to render me content. For our will naturally moving us to deſire nothing, but thoſe things which our underſtanding preſents in ſome manner as poſſible, certain it is, that if we conſider all the good which is without us, as equally diſtant from our power, we ſhould have no more regret for the want of thoſe which ſeem due to our births, when without any fault of ours we ſhall be deprived of them, then we have in wanting the poſſeſſions of the Kingdoms of

China

China or *Mexico*. And making (as we ſay) vertue of neceſſity, we ſhould no more deſire to be in health being ſick, or free being in priſon, then we now do, to have bodies of as incorruptible a matter as diamonds, or wings to fly like birds. But I confeſs, that a long exerciſe, and an often reiterated meditation, is neceſſary to accuſtom us to look on all things with that byaſs: And I beleeve, in this principally conſiſts, the ſecret of thoſe Philoſophers who formerly could ſnatch themſelves from the Empire of Fortune, and in ſpight of pains and poverty, diſpute felicity with their Gods. for imploying themſelves inceſſantly in conſidering the bounds which Nature had preſcribed them, they ſo perfectly perſwaded themſelves, That nothing was in their power but their thoughts, that, that onely was enough to hinder them from having any affection for other things. And they diſpoſed ſo abſolutely of them, that therein they had ſome reaſon to eſteem themſelves more

more rich and powerfull, more free and happy then any other men; who wanting this *Philoſophy*, though they were never ſo much favoured by Nature and Fortune, could never diſpoſe of all things ſo well as they deſired.

Laſtly, To conclude theſe Morals, I thought fit to make a review of mens ſeverall imployments in this life, that I might endeavour to make choice of the beſt, and without prejudice to other mens, I thought I could not do better then to continue in the ſame wherein I was, that is, to imploy all my life in cultivating my Reaſon, and advancing my ſelf, as far as I could in the knowledge of Truth, following the Method I had preſcribed my ſelf. I was ſenſible of ſuch extreme contentment ſince I began to uſe this Method, that I thought none could in this life be capable of any more ſweet and innocent: and daily diſcovering by means thereof, ſome Truths which ſeemed to me of importance, and commonly ſuch as other men

men were ignorant of, the ſatisfaction I thereby received did ſo poſſeſſe my minde, as if all things elſe concern'd me not. Beſides, that the three preceding Maximes were grounded only on the deſigne I had, to continue the inſtruction of my ſelf. For God having given to every one of us a light to diſcern truth from falſhood, I could not beleeve I ought to content my ſelf one moment with the opinions of others, unleſſe I had propoſed to my ſelf in due time to imploy my judgment in the examination of them. Neither could I have exempted my ſelf from ſcruple in following them, had I not hoped to loſe no occaſion of finding out better, if there were any.

But to conclude, I could not have bounded my deſires, nor have been content, had I not followed a way, whereby thinking my ſelf aſſured to acquire all the knowledge I could be capable of: I thought I might by the ſame means attain to all that was truly

ly good, which ſhould ever be within my power; foraſmuch as our Will inclining it ſelf to follow, or fly nothing but what our Underſtanding propoſeth good or ill, to judge well is ſufficient to do well, and to judge the beſt we can, to do alſo what's beſt; to wit, to acquire all vertues, and with them all acquirable goods: and whoſoever is ſure of that, he can never fail of being content.

After I had thus confirmed my ſelf with theſe Maximes, and laid them up with the Articles of Faith, which always had the firſt place in my Belief, I judg'd that I might freely undertake to expell all the reſt of my opinions. And foraſmuch as I did hope to bring it the better to paſſe by converſing with men, then by ſtaying any longer in my ſtove, where I had had all theſe thoughts: before the Winter was fully ended, I returned to my travels; and in all the nine following yeers I did nothing but rowl here and there about the world, endea-

deavouring rather to be a ſpectator, then an actor in all thoſe Comedies which were acted therein : and reflecting particularly on every ſubject which might render it ſuſpected, or afford any occaſion of miſtake. In the mean time I rooted out of my minde all thoſe errours which formerly had crept in. Not that I therein imitated the Scepticks, who doubt onely to the end they may doubt, and affect to be always unreſolved : For on the contrary, all my deſigne tended onely to fix my ſelf, and to avoid quick-mires and ſands, that I might finde rock and clay : which (me thought) ſucceeded well enough; foraſmuch as, ſeeking to diſcover the falſhood or uncertainty of thoſe propoſitions I examined, (not by weak conjectures, but by clear and certain ratiocinations) I met with none ſo doubtfull, but I thence drew ſome concluſion certain enough, were it but onely this, That it contained nothing that was certain. And as in pulling down an old houſe, commonly

ly thoſe materials are reſerved which may ſerve to build a new one; ſo in deſtroying all thoſe my opinions which I judg'd ill grounded, I made divers obſervations, and got ſeverall experiences which ſerved me ſince to eſtabliſh more certain ones. And beſides I continued to exerciſe my ſelf in the Method I had preſcibed.

For I was not only carefull to direct all my thoughts in generall according to its rules, but I from time to time reſerv'd ſome houres, which I particularly employd to practice it in difficulties belonging to the Mathematicks, looſening from all the principles of other Sciences, which I found not ſtable enough, as you may ſee I have done in divers explain'd in my other following diſcourſes. And thus not living in appearance otherwiſe then thoſe who having no other buſineſs then to lead a ſweet and innocent life, ſtudy to ſeparate pleaſures from vices, and uſe honeſt recreations to enjoy their eaſe without wearineſſe; I did not forbear

to

to purſue my deſign, and advance in the knowledg of truth, perhaps more, then if I had done nothing but read books or frequent learned men.

Yet theſe nine years were vaniſhed before I had engaged my ſelf in thoſe difficulties which uſe to be diſputed amongſt the learned; or begun to ſeek the grounds of any more certain Philoſophy then the Vulgar: And the example of divers excellent Men, who formerly having had the ſame deſigne, ſeem'd not to me to have ſucceeded therein, made me imagine ſo much difficulty, that I had not perhaps dar'd ſo quickly to have undertaken it, had I not perceiv'd that ſome already had given it out that I had already accompliſhed it. I know not whereupon they grounded this opinion, and if I have contributed any thing thereto by my diſcourſe, it muſt have been by confeſſing more ingeniouſly what I was ignorant of, then thoſe are wont to do who have a little ſtudyed, and perhaps alſo by comunicating thoſe reaſons, I

had

had to doubt of many things which others esteem'd most eminent, rather then that I bragg'd of any learning. But having integrity enough, not to desire to be taken for what I was not, I thought that I ought to endeavour by all means to render my self worthy of the reputation which was given me. And 'tis now eight years since this desire made me resolve to estrange my self from all places where I might have any acquaintance, and so retire my self hither in a Country where the long continuance of the warre hath established such orders, that the Armies which are intertain'd there, seem to serve onely to make the inhabitants enjoy the fruits of peace with so much the more security; and where amongst the croud of a great people more active and solicitous for their own affaires, then curious of other mens, not wanting any of those necessaries which are in the most frequented Towns, I could live as solitary and retired as in the most remote deserts.

Part. IIII.

I Know not whether I ought to entertain you with the first Meditations which I had there, for they are so Metaphysicall and so little common, that perhaps they will not be relished by all men: And yet that you may judge whether the foundations I have laid are firm enough, I find my self in a manner oblig'd to discourse them; I had long since observed that as for manners, it was somtimes necessary to follow those opinions which we know to be very uncertain, as much as if they were indubitable, as is beforesaid: But because that then I desired onely to intend the search of truth, I thought I ought to doe the contrary, and reject as absolutely false all wherein I could imagine the least doubt, to the end I might see if afterwards any thing might

might remain in my belief, not at all ſubject to doubt. Thus becauſe our ſenſes ſometimes deceive us, I would ſuppoſe that there was nothing which was ſuch as they repreſented it to us. And becauſe there are men who miſtake themſelves in reaſoning, even in the moſt ſimple matters of Geometry, and make therein Paralogiſmes, judging that I was as ſubject to fail as any other Man, I rejected as falſe all thoſe reaſons, which I had before taken for Demonſtrations. And conſidering, that the ſame thoughts which we have waking, may alſo happen to us ſleeping, when as not any one of them is true. I reſolv'd to faign, that all thoſe things which ever entred into my Minde, were no more true, then the illuſions of my dreams. But preſently after I obſerv'd, that whilſt I would think that all was falſe, it muſt neceſſarily follow, that I who thought it, muſt be ſomething. And perceiving that this Truth, *I think*, therefore, *I am*, was ſo firm and cer-

tain, that all the moſt extravagant ſuppoſitions of the Scepticks was not able to ſhake it, I judg'd that I might receive it without ſcruple for the firſt principle of the Philoſophy I ſought.

Examining carefully afterwards what I was; and ſeeing that I could ſuppoſe that I had no *body*, and that there was no *World*, nor any *place* where I was: but for all this, I could not feign that I *was not*; and that even contrary thereto, thinking to doubt the truth of other things, it moſt evidently and certainly followed, That *I was*: whereas, if I had ceaſ'd to *think*, although all the reſt of what ever I had imagined were true, I had no reaſon to beleeve that *I had been*. I knew then that I was a ſubſtance, whoſe whole eſſence or nature is, but to *think*, and who to *be*, hath need of no place, nor depends on any materiall thing. So that this *Me*, to wit, my Soul, by which I am what I am, is wholly diſtinct from the Body, and

more

more eaſie to be known then *it*; and although *that* were not, it would not therefore ceaſe to be what it is.

After this I conſidered in generall what is requiſite in a Propoſition to make it true and certain: for ſince I had found out one which I knew to be ſo, I thought I ought alſo to conſider wherein that certainty conſiſted: and having obſerved, That there is nothing at all in this, *I think*, therefore *I am*, which aſſures me that I ſpeak the truth, except this, that I ſee moſt cleerly, That *to think*, one muſt have a *being*; I judg'd that I might take for a generall rule, That thoſe things which we conceive cleerly and diſtinctly, are all true; and that the onely difficulty is punctually to obſerve what thoſe are which we diſtinctly conceive.

In purſuance whereof, reflecting on what I doubted, and that conſequently my *being* was not perfect; for I clearly perceived, that it was a greater perfection to know, then to doubt,

I advised in my self to seek from whence I had learnt to think on something which was more perfect then I; and I knew evidently that it must be of some nature which was indeed more perfect. As for what concerns the thoughts I had of divers other things without my self, as of heaven, earth, light, heat, and a thousand more, I was not so much troubled to know whence they came, for that I observed nothing in them which seemed to render them superiour to me; I might beleeve, that if they were true, they were dependancies from my nature, as far forth as it had any perfection; and if they were not, I made no accompt of them; that is to say, That they were in me, because I had something deficient. But it could not be the same with the *Idea* of a being more perfect then mine: For to esteem of it as of nothing, was a thing manifestly impossible. And because there is no lesse repugnancy that the more perfect should succeed from and de-

pend

pend upon the leis perfect, then for ſomething to proceed from nothing, I could no more hold it from my ſelf: So as it followed, that it muſt have bin put into me by a Nature which was truly more perfect then *I*, and even which had in it all the perfections whereof I could have an *Idea*; to wit, (to explain my ſelf in one word) God. Whereto I added, that ſince I knew ſome perfections which I had not, I was not the onely *Being* which had an exiſtence, (I ſhall, under favour, uſe here freely the terms of the Schools) but that of neceſſity there muſt be ſome other more perfect whereon I depended, and from whom I had gotten all what I had: For had I been alone, and depending upon no other thing, ſo that I had had of my ſelf all that little which I participated of a perfect Being, I might have had by the ſame reaſon from my ſelf, all the remainder which I knew I wanted, and ſo have been my ſelf infinite, eternall, immutable, all-knowing, al-

mighty; and laſtly, have had all thoſe perfections which I have obſerved to be in God. For according to the way of reaſoning I have now followed, to know the nature of God, as far as mine own was capable of it, I was onely to conſider of thoſe things of which I found an *Idea* in me, whether the poſſeſſing of them were a perfection or no; and I was ſure, that any of thoſe which had any imperfections were not in him, but that all others were. I ſaw that doubtfulneſs, inconſtancy, ſorrow and the like, could not be in him, ſeeing I could my ſelf have wiſh'd to have been exempted from them. Beſides this, I had the *Ideas* of divers ſenſible and corporeall things; for although I ſuppoſed that I doted, and that all that I ſaw or imagined was falſe; yet could I not deny but that theſe *Ideas* were truly in my thoughts. But becauſe I had moſt evidently known in my ſelf, That the underſtanding Nature is diſtinct from the corporeall, conſidering that all compoſition

position witnesseth a dependency, and that dependency is manifestly a defect, I thence judged that it could not be a perfection in God to be composed of those two Natures; and that by consequence he was not so composed. But that if there were any Bodies in the world, or els any intelligences, or other Natures which were not wholly perfect, their being must depend from his power in such a manner, that they could not subsist one moment without him.

Thence I went in search of other Truths; and having proposed *Geometry* for my object, which I conceived as a continued Body, or a space indefinitely spred in length, bredth, height or depth, divisible into divers parts, which might take severall figures and bignesses, and be moved and transposed every way. For the Geometricians suppose all this in their object. I past through some of their most simple demonstrations; and having observed that this great certaintie,

tie, which all the world grants them, is founded only on this, that men evidently conceived them, following the rule I already mentioned. I obſerved alſo that there was nothing at all in them which aſcertain'd me of the exiſtence of their object. As for example, I well perceive, that ſuppoſing a Triangle, three angles neceſſarily muſt be equall to two right ones: but yet nevertheleſs I ſaw nothing which aſſured me that there was a Triangle in the world. Whereas returning to examine the *Idea* which I had of a perfect Being, *I* found its exiſtence compriſed in it, in the ſame manner as it was compriſed in that of a Triangle, where the three angles are equall to two right ones; or in that of a ſphere, where all the parts are equally diſtant from the center. Or even yet more evidently, and that by conſequence, it is at leaſt as certain that God, who is that perfect Being, is, or exiſts, as any demonſtration in Geometry can be.

But

But that which makes many perſwade themſelves that there is difficulty in knowing it, as alſo to know what their Soul is, 'tis that they never raiſe their thoughts beyond ſenſible things, and that they are ſo accuſtomed to conſider nothing but by imagination, which is a particular manner of thinking on materiall things, that whatſoever is not imaginable ſeems to them not intelligible. Which is manifeſt enough from this, that even the Philoſophers hold for a Maxime in the Schools, That there is nothing in the underſtanding which was not firſt in the ſenſe; where notwithſtanding its certain, that the *Ideas* of God and of the Soul never were. And (me thinks) thoſe who uſe their imagination to comprehend them, are juſt as thoſe, who to hear ſounds, or ſmell odours, would make uſe of their eyes; ſave that there is yet this difference, That the ſenſe of ſeeing aſſures us no leſſe of the truth of its objects, then thoſe of ſmelling or hearing do: whereas

whereas neither our imagination, nor our ſenſes, can ever aſſure us of any thing, if our underſtanding intervenes not.

To be ſhort, if there remain any who are not enough perſwaded of the exiſtence of God, and of their ſoul, from the reaſons I have produc'd, I would have them know, that all other things, whereof perhaps they think themſelves more aſſured, as to have a body, and that there are Stars, and an earth, and the like, are leſs certain. For although we had ſuch a morall aſſurance of theſe things, that without being extravagant we could not doubt of them. However, unleſs we be nn-reaſonable when a metaphyſicall certainty is in queſtion, we cannot deny but we have cauſe enough not to be wholly confirm'd in them, when we conſider that in the ſame manner we may imagine being aſleep, we have other bodies, and that we ſee other Stars, and another earth, though there be no ſuch thing. For how doe

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we know that thoſe thoughts which we have in our dreams, are rather falſe then the others, ſeeing often they are no leſs lively and ſignificant, and let the ableſt men ſtudy it as long as they pleaſe, I beleeve they can give no ſufficient reaſon to remove this doubt, unleſs they preſuppoſe the exiſtence of God. For firſt of all, that which I even now took for a rule, to wit, that thoſe things which were moſt clearly and diſtinctly conceived, are all true, is certain, only by reaſon, that God is or exiſts, and that he is a perfect being, and that all which we have comes from him. Whence it follows, that our Idea's or notions, being reall things, and which come from God in all wherein they are clear and diſtinct, cannot therein be but true. So that if we have very often any which contain falſhood, they cannot be but of ſuch things which are ſomewhat confus'd and obſcure, becauſe that therein they ſignifie nothing to us, that's to ſay, that they are thus confus'd in us only, be-

cauſe

cause we are not wholly perfect. And it's evident that there is no less contrariety that falshood and imperfection should proceed from God, as such, then there is in this, that truth and falshood proceed from nothing. But if we know not that whatsoever was true and reall in us comes from a perfect and infinite being, how clear and distinct soever our Idea's were, we should have no reason to assure us, that they had the perfection to be true.

Now after that the knowledge of God, and of the Soul hath rendred us thus certain of this rule, it's easie to know; that the extravaganceys which we imagin in our sleep, ought no way to make us doubt of the truth of those thoughts which we have being awake: For if it should happen, that even sleeping we should have a very distinct Idea; as for example, A Geometritian should invent some new demonstration, his sleeping would not hinder it to be true. And for the

most

most ordinary error of our dreames, which consists in that they represent unto us severall objects in the same manner as our exterior senses doe, it matters not though it give us occasion to mistrust the truth of those Ideas, because that they may also often enough cozen us when we doe not sleep; As when to those who have the Jaundies, all they see seems yellow; or, as the Stars or other bodies at a distance, appear much less then they are. For in fine, whether we sleep or wake, we ought never to suffer our selves to be perswaded but by the evidence of our Reason; I say, (which is observable) Of our Reason, and not of our imagination, or of our senses. As although we see the Sun most clearly, we are not therefore to judge him to be of the bigness we see him of; and we may well distinctly imagine the head of a Lion, set on the body of a Goat, but therefore we ought not to conclude that there is a *Chimera* in the world. For reason doth not dictate

to

to us, that what we ſee or imagine ſo, is true: But it dictates, that all our Idea's or notions ought to have ſome grounds of truth; For it were not poſſible, that God who is all perfect, and all truth, ſhould have put them in us without that: And becauſe that our reaſonings are never ſo evident, nor ſo entire while we ſleep, as when we wake, although ſometimes our imaginations be then as much or more lively and expreſs. It alſo dictates to us, that our thoughts, ſeeing they cannot be all true by reaſon that we are not wholly perfect; what they have of truth, ought infallibly to occur in thoſe which we have being awake, rather then in our dreams.

PART.

PART. V.

I Should be glad to purſue this Diſcourſe, and ſhew you the whole Series of the following Truths, which I have drawn from the former: But becauſe for this purpoſe, it were now neceſſary for me to treat of ſeverall queſtions, which are controverted by the learned, with whom I have no deſire to imbroil my ſelf, I beleeve it better for me to abſtain from it; and ſo in generall onely to diſcover what they are, that I may leave the wiſeſt to judge whether it were profitable to inform the publick more particularly of them. I alwayes remained conſtant to my reſolution, to ſuppoſe no other Principle but that which I now made uſe of, for the demonſtration of the Exiſtence of God, and of

the Soul; and to receive nothing for true, which did not seem to me more clear and more certain then the demonstrations of Geometry had formerly done. And yet I dare say, that *I* have not onely found out the means to satisfie my self, in a short time, concerning all the principall difficulties which are usually treated in Philosophy. But that also *I* have observed certain Laws which God hath so established in Nature, and of which he hath imprinted such notions in our Souls, that when we shall have made sufficient reflections upon them, we cannot doubt but that they are exactly observed in whatsoever either is, or is done in the World. Then considering the connexion of these Laws, me thinks, I have discovered divers Truths, more usefull and important, then whatever *I* learn'd before, or ever hop'd to learn.

But because *I* have endeavoured to lay open the principall of them in a Treatise, which some considerations hinder

hinder me from publiſhing; *I* can no way better make them known, then by relating ſummarily what it contains.

I had a deſigne to comprehend all what I thought *I* knew, before *I* would write it, touching the nature of material things. But even as Painters, not being able equally well to repreſent upon a *flat* all the ſeverall facies of a ſolid body, chuſe the principall of them, which they place towards the light; and ſhadowing the others, make them appear no more then they do to our ſight: So, fearing leſt *I* ſhould not bring into this Diſcourſe all which was in my thoughts, *I* onely undertook to ſet forth at large my conceptions touching the light; and upon that occaſion to add ſomewhat of the Sun, and of the fix'd Stars, by reaſon that it proceeds almoſt all from thence; of the Heavens, becauſe they tranſmit it; of the Planets, of the Comets, and of the Earth, becauſe they cauſe it to reflect;

and in particular, of all Bodies which are on the earth, whether for that they are either coloured, or transparent, or luminous; and last of all, of Man, because he is the Spectator thereof. As also, in some manner to shadow out all these things, and that *I* might the more freely speak what *I* judg'd, without being obliged to follow, or to refute the opinions which are received amongst the Learned, *I* resolved to leave all this world here to their disputes, and to speak onely of what would happen in a new one, if God now created some where in those imaginary spaces matter enough to compose it, and that he diversly and without order agitated the several parts of this matter, so as to compose a Chaos of it as confused as the Poets could feign one: and that afterwards he did nothing but lend his ordinary concurrence to Nature, and leave her to work according to the Laws he hath established.

Thus first of all *I* described this Mat-

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ter, and endevoured to repreſent it ſuch, that me thinks there is nothing in the world more clear, or more intelligible, except what was beforeſaid of God, and of the Soul. For even *I* expreſly ſuppoſed that there was in it none of thoſe forms and qualities which are diſputed in the Schools; nor generally any thing but that the knowledge thereof was ſo naturall to our underſtandings, that we could not even feigne to be ignorant of it. Beſides, I made known what the Laws of Nature were; and without grounding my reaſons on any other principles, but on the infinite perfections of God, I did endeavour to demonſtrate all thoſe which might be queſtioned, and to make them appear to be ſuch, that although God had created divers worlds, there could have been none where they were not obſerved. Afterwards *I* ſhewed how the greater part of the Matter of this *Chaos* ought, according to thoſe Laws, to diſpoſe and order it ſelf in a cer-

tain manner, which would make it like our Heavens: And how ſome of theſe parts were to compoſe an Earth, and ſome Planets and Commets, ſome others a Sun and fix'd Starrs. And here enlarging my ſelf on the ſubject of Light, *I* at length explain'd what that light was, which was to be in the Sun and Stars; and thence how it traverſ'd in an inſtant the immenſe ſpaces of the Heavens, and how it reflected it ſelf from Planets and Commets towards the Earth. *I* added alſo divers things touching the ſubſtance, ſituation, the motions, and all the ſeveral qualities of theſe heavens and theſe ſtars: So that *I* thought *I* had ſaid enough to make known, That there is nothing remarkable in thoſe of this world, which ought not, or at leaſt could not appear altogether like to theſe of that world which *I* deſcribed.

Thence *I* came to ſpeak particularly of the Earth; how, although I had expreſly ſuppoſed, that God had placed

ced no weight in the Matter where-of it was compoſed; yet all its parts exactly tended towards its center: How that there being water and air upon its ſuperficies, the diſpoſition of the Heavens, and of the Starrs, and chiefly of the Moon, ought to cauſe a floud and an ebb, which in all circumſtances was like to that which we obſerve in our Seas; And beſides, a certain courſe aſwel of the water, as of the air, from Eaſt to Weſt, as is alſo obſerved between the Tropicks: How the Mountains, the Seas, the Springs and Rivers might naturally be form'd therein, and Metals run in the mines, and Plants grow in the Fields, and generally all bodies be therein engendered which are call'd mixt or compoſed..

And amongſt other things, becauſe that next the Stars, I know nothing in the world but Fire, which produceth light, I ſtudied to make all clearly underſtood which belongs to its nature; how it's made, how it's fed,

how ſometimes it hath heat onely without light, and ſometimes onely light without heat; how it can introduce ſeveral colours into ſeveral bodies, and divers other qualities; how it diſſolves ſome, and hardens others; how it can conſume almoſt all, or convert them into aſhes and ſmoak: and laſt of all, how of thoſe aſhes, by the only violence of its action, it forms glaſs. For this tranſmutation of aſhes into glaſs, ſeeming to me to be as admirable as any other operation in Nature, I particularly took pleaſure to deſcribe it.

Yet would I not inferre from all theſe things, that this World was created after the manner I had propoſed. For it is more propable that God made it ſuch as it was to be, from the beginning. But it's certain, and 'tis an opinion commonly received amongſt the Divines, That the action whereby he now preſerveth it, is the ſame with that by which he created it. So that, although at the begin-

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ning he had given it no other form but that of a Chaos (provided, that having eſtabliſhed the Laws of Nature, he had afforded his concurrence to it, to work as it uſed to do) we may beleeve (without doing wrong to the miracle of the Creation) that by that alone all things which are purely material might in time have rendred themſelves ſuch as we now ſee them: and their nature is far eaſier to conceive, when by little and little we ſee them brought forth ſo, then when we conſider them quite form'd all at once.

From the deſcription of inanimate Bodies and Plants, I paſs'd to that of Animals, and particularly to that of Men. But becauſe I had not yet knowledge enough to ſpeak of them in the ſame ſtile as of the others; to wit, in demonſtrating effects by their cauſes, and ſhewing from what ſeeds, and in what manner Nature ought to produce them; I contented my ſelf to ſuppoſe, That God form'd the body

dy of a Man altogether like one of ours, aſwel in the exteriour figure of its members, as in the interiour conformity of its organs; without framing it of other matter then of that which I had deſcribed; and without putting in it at the beginning any reaſonable ſoul, or any other thing to ſerve therein for a vegetative or ſenſitive ſoul; unleſs he ſtirr'd up in his heart one of thoſe fires without light which I had already diſcovered; and that I conceiv'd of no other nature but that which heats hay when its houſed before it be dry, or which cauſeth new Wines to boyl when it works upon the rape: For examining the functions which might be conſequently in this body, I exactly found all thoſe which may be in us, without our thinking of them; and to which our ſoul (that is to ſay, that diſtinct part from our bodies, whoſe nature (as hath been ſaid before) is onely to think) conſequently doth not contribute, and which are all the

ſame

ſame wherein we may ſay unreaſonable creatures reſemble us. Yet could I not finde any, of thoſe which depending from the thought, are the onely ones which belong unto us as Men; whereas I found them all afterwards, having ſuppoſed that God created a reaſonable ſoul, and that he joyn'd it to this body, after a certain manner which I deſcrib'd.

But that you might ſee how I treated this matter, I ſhall here preſent you with the explication of the motion of the heart, and of the arteries, which being the firſt and moſt geneſal (which is obſerved in animals) we may thereby eaſily judge what we ought to think of all the reſt. And that we may have the leſs difficulty to underſtand what I ſhall ſay thereof, I wiſh thoſe who are not verſed in Anatomy, would take the pains, before they read this, to cauſe the heart of ſome great animal which hath lungs, to be diſſected; for in all of them its very like that of a Man: and that they

they may have ſhewn them the two cels or concavities which are there: Firſt that on the right ſide, whereto two large conduits anſwer, to wit, the *vena cava*, which is the principal receptacle of bloud, and as the body of a tree, whereof all the other veins of the body are branches; and the arterious vein, which was ſo miſ-call'd, becauſe that in effect its an artery, which taking its *origine* from the heart, divides it ſelf after being come forth, into divers branches, which every way ſpred themſelves through the lungs. Then the other which is on the left ſide, whereunto in the ſame manner two pipes anſwer, which are as large, or larger then the former; to wit, the veinous artery, which was alſo il named, foraſmuch as its nothing elſe but a vein which comes from the lungs, where its divided into ſeveral branches interlaid with thoſe of the arterious vein, and thoſe of that pipe which is called the Whiſtle, by which the breath enters. And the great artery

tery, which proceeding from the heart, diſperſeth its branches thorow all the body. I would alſo that they would carefully obſerve the eleven little skins, which, as ſo many little doors, open and ſhut the four openings which are in theſe two concavities; to wit, three at the entry of the *vena cava*, where they are ſo diſpoſed, that they can no wayes hinder the bloud which it contains from running into the right concavity of the heart; and yet altogether hinder it from coming out. Three at the entry of the arterious vein; which being diſpoſed quite contrary, permit only the bloud which is in that concavity to paſs to the lungs; but not that which is in the lungs to return thither. And then two others at the entry of the veinous artery, which permits the bloud to run to the left concavity of the heart, but oppoſeth its return. And three at the entry of the great artery, which permit it to go from the heart, but hinder its return thither. Neither need

need we ſeek any other reaſon for the number of theſe skins, ſave only that the opening of the veinous artery, being oval-wiſe, by reaſon of its ſituation, may be fitly ſhut with two; whereas the other, being round, may the better be clos'd with three. Beſides, I would have them conſider, that the great artery and the arterious vein are of a compoſition much ſtronger then the veinous artery or the *vena cava*. And that theſe two later grow larger before they enter into the heart, and make (as it were) two purſes, call'd the ears of the heart, which are compoſed of a fleſh like it; and that there is always more heat in the heart then in any other part of the body. And in fine, that if any drop of bloud enter into theſe concavities, this heat is able to make it preſently ſwell and dilate it ſelf, as generally all liquors do, when drop by drop we let them fall into a very hot veſſel.

For after this I need ſay no more for

to unfold the motion of the heart, but that when these concavities are not full of bloud, necessarily there runs some from the *vena cava* into the right, and from the veinous artery into the left; for that these two vessels are always full of it, and that their openings which are towards the heart cannot then be shut: But that assoon as there is thus but two drops of bloud entred, one in either of these concavities, these drops, which cannot but be very big, by reason that their openings whereby they enter are very large, and the vessels whence they come very full of bloud, are rarified and dilated because of the heat which they find therein. By means whereof, causing all the heart to swel, they drive and shut the five little doors which are at the entry of the two vessels whence they come, hindering thereby any more bloud to fall down into the heart, and continuing more and more to rarifie themselves, they drive and open the six other little doors

doors which are at the entry of the other two veſſels whence they iſſue, cauſing by that means all the branches of the arterious vein, and of the great artery, to ſwel (as it were) at the ſame time with the heart: which preſently after fals, as thoſe arteries alſo do, by reaſon that the bloud which is entred therein grows colder, and their ſix little doors ſhut up again, and thoſe five of the *vena cava*, and of the veinous artery open again, and give way to two other drops of bloud, which again ſwell the heart and the arteries in the ſame manner as the preceding did. And becauſe the bloud which thus enters into the heart, paſſeth thorow thoſe two purſes, which are call'd the ears; thence it comes, that their motion is contrary to the heart's, and that they fall when that ſwels.

Laſtly, That they who know not the force of Mathematical demonſtrations, and are not accuſtomed to diſtinguiſh true reaſons from probable ones, may not veuture to deny this with-

without examining it, I ſhall advertiſe them, that this motion which I have now diſcovered, as neceſſarily follows from the onely diſpoſition of the organs (which may plainly be ſeen in the heart,) and from the heat (which we may feel with our fingers,) and from the nature of the bloud (which we may know by experience,) as the motions of a clock doth by the force, ſituation and figure of its weight and wheels.

But if it be asked, how it comes that the bloud of the veins is not exhauſted, running ſo continually into the heart; and how that the arteries are not too full, ſince all that which paſſeth thorow the heart diſchargeth it ſelf into them: I need anſwer nothing thereto but what hath been already writ by an Engliſh Phyſician, to whom this praiſe muſt be given, to have broken the ice in this place, and to be the firſt who taught us, That there are ſeveral little paſſages in the extremity of the arteries whereby the

bloud which they receive from the heart, enters the little branches of the veins; whence again it ſends it ſelf back towards the heart: ſo that its courſe is no other thing but a perpetuall circulation. Which he very wel proves by the ordinary experience of Chirurgians, who having bound the arm indifferently hard above the the place where they open the vein, which cauſeth the bloud to iſſue more abundantly, then if it had not been bound. And the contrary would happen, were it bound underneath, between the hand and the inciſion, or bound very hard above. For its manifeſt, that the band indifferently tyed, being able to hinder the bloud which is already in the arm to return towards the heart by the veins; yet it therefore hinders not the new from coming always by the arteries, by reaſon they are placed under the veins, and that their skin being thicker, are leſs eaſie to be preſs'd; as alſo that the bloud which comes from the

heart

heart, ſeeks more forcibly to paſſe by them towards the hand, then it doth to return from thence towards the heart by the veins. And ſince this bloud which iſſues from the arm by the inciſion made in one of the veins, muſt neceſſarily have ſome paſſage under the bond, to wit, towards the extremities of the arm, whereby it may come thither by the arteries, he alſo proves very well what he ſayes of the courſe of the bloud through certain little skins, which are ſo diſpoſed in divers places along the veins, which permit it not to paſs from the middle towards the extremities, but onely to return from the extremities towards the heart. And beſides this, experience ſhews, That all the bloud which is in the body may in a very little time run out by one onely artery's being cut, although it were even bound very neer the heart, and cut betwixt it and the ligature: So that we could have no reaſon to imagine that the bloud which iſſued thence

could come from any other part.

But there are divers other things which witneſs, that the true cauſe of this motion of the bloud is that which I have related. As firſt, The difference obſerved between that which iſſues out of the veins, and that which comes out of the arteries, cannot proceed but from its being rarified and (as it were) diſtilled by paſſing thorow the heart: its more ſubtil, more lively, and more hot preſently after it comes out; that is to ſay, being in the arteries, then it is a little before it enters them, that is to ſay, in the veins. And if you obſerve, you will finde, that this difference appears not well but about the heart; and not ſo much in thoſe places which are farther off. Next, the hardneſſe of the ſkin of which the artery vein and the great artery are compoſed, ſheweth ſufficiently, that the bloud beats againſt them more forcibly then againſt the veins. And why ſhould the left concavity of the heart, and the great

great artery be more large and ample then the right concavity, and the arterious vein; unleſs it were that the bloud of the veinous artery, having bin but onely in the lungs ſince its paſſage thorow the heart, is more ſubtil, and is rarified with more force and eaſe then the bloud which immediately comes from the *vena cava*. And what can the Phyſicians divine by feeling of the pulſe, unleſſe they know, that according as the bloud changeth its nature, it may by the heat of the heart be rarified to be more or leſſe ſtrong, and more or leſſe quick then before. And if we examine how this heat is communicated to the other members, muſt we not avow that 'tis by means of the bloud, which paſſing the heart, reheats it ſelf there, and thence diſperſeth it ſelf thorow the whole body: whence it happens, that if you take away the bloud from any part, the heat by the ſame means alſo is taken away. And although the heart were as burning as hot iron, it

were not ſufficient to warm the feet and the hands ſo often as it doth, did it not continue to furniſh them with new bloud.

Beſides, from thence we know alſo that the true uſe of reſpiration is to bring freſh air enough to the lungs, to cauſe that bloud which comes from the right concavity of the heart, where it was rarified, and (as it were) ch:ng'd into vapours, there to thicken, and convert it ſelf into bloud again, before it fall again into the left, without which it would not be fit to ſerve for the nouriſhment of the fire which is there. Which is confirm'd, for that its ſeen, that animals which have no lungs have but one onely concavity in the heart; and that children, who can make no uſe of them when they are in their mothers bellies, have an opening, by which the bloud of the *vena cava* runs to the left concavity of the heart, and a conduit by which it comes from the arterious vein into the great artery without

out passing the lungs.

Next, How would the concoction be made in the stomach, unless the heart sent heat by the arteries, and therewithall some of the most fluid parts of the bloud, which help to dissolve the meat receiv'd therein? and is not the act which converts the juice of these meats into bloud easie to be known, if we consider, that it is distill'd by passing and repassing the heart, perhaps more then one or two hundred times a day? And what need we ought else to explain the nutrition and the production of divers humours which are in the body, but to say, that the force wherewith the bloud in rarifying it self, passeth from the heart towards the extremities of the arteries, causeth some of its parts to stay amongst those of the members where they are, and there take the place of some others, which they drive from thence? And that according to the situation, or the figure, or the smalness of the pores which they

meet, ſome arrive ſooner in one place then others. In the ſame manner as we may have ſeen in ſeverall ſieves, which being diverſly pierc'd, ſerve to ſever divers grains one from the other. And briefly, that which is moſt remarkable herein, is the generation of the animal ſpirits, which are as a moſt ſubtil wind, or rather, as a moſt pure and lively flame, which continually riſing in great abundance from the heart to the brain, diſchargeth it ſelf thence by the nerves into the muſcles, and gives motion to all the members; without imagining any other reaſon which might cauſe theſe parts of the bloud, which being moſt mov'd, and the moſt penetrating, are the moſt fit to form theſe ſpirits, tend rather towards the brain, then to any other part. Save onely that the arteries which carry them thither, are thoſe which come from the heart in the moſt direct line of all: And that according to the rules of the Mechanicks, which are the ſame with thoſe

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of Nature, when divers things together ſtrive to move one way, where there is not room enough for all; ſo thoſe parts of bloud which iſſue from the left concavity of the heart tend towards the brain, the weaker and leſs agitated are expell'd by the ſtronger, who by that means arrive therealone.

I had particularly enough expounded all theſe things in a Treatiſe which I formerly had deſign'd to publiſh: In purſuit whereof, I had therein ſhewed what ought to be the fabrick of the nerves and muſcles of an humane body, to cauſe thoſe animall ſpirits which were in them, to have the power to move thoſe members. As we ſee that heads a while after they are cut off, yet move of themſelves, and bite the ground, although they are not then animated. What changes ought to be made in the brain to cauſe waking, ſleeping, and dreaming: how light, ſounds, ſmels, taſts, heat, and all other qualities of exteriour objects, might imprint ſeverall

Ideas

Ideas by means of the ſenſes. How hunger and thirſt, and the other interiour paſſions might alſo ſend theirs thither. What ought to be taken therein for common ſenſe, where theſe *Ideas* are received; for memory which preſerves them; and for fancy, which can diverſly change them, and form new ones of them; and by the ſame means, diſtributing the animal ſpirits into the muſcles, make the members of the body move in ſo many ſeverall faſhions, and as fitly to thoſe objects which preſent themſelves to its ſenſes; and to the interiour paſſions which are in them, as ours may move themſelves without the conſent of the Wil. Which wil ſeem nothing ſtrange to thoſe, who knowing how many *Automatas* or moving Machines the induſtry of men can make, imploying but very few pieces, in compariſon of the great abundance of bones, muſcles, nerves, arteries, veins, and all the other parts which are in the body of every Animal, will conſider

ſider this body as a fabrick, which having been made by the hands of God, is incomparably better ordered, and hath more admirable motions in it then any of thoſe which can be invented by men. And herein I particularly inſiſted, to make it appear, that if there were ſuch Machines which had organs, and the exteriour figure of an Ape, or of any other unreaſonable creature, we ſhould finde no means of knowing them not to be altogether of the ſame nature as thoſe Animals: whereas, if there were any which reſembled our bodies, and imitated our actions as much as morally it were poſſible, we ſhould always have two moſt certain ways to know, that for all that they were not reall men: The firſt of which is, that they could never have the uſe of ſpeech, nor of other ſignes in framing it, as we have, to declare our thoughts to others: for we may well conceive, that a Machine may be ſo made, that it may utter words, and even ſome proper to the cor-

corporal actions, which may cauſe ſome change in its organs; as if we touch it in ſome part, and it ſhould ask what we would ſay; or ſo as it might cry out that one hurts it, and the like: but not that they can diverſifie them to anſwer ſenſibly to all what ſhall be ſpoken in its preſence, as the dulleſt men may do. And the ſecond is, That although they did divers things aſwel, or perhaps better, then any of us, they muſt infallibly fail in ſome others, whereby we might diſcover that they act not with knowledge, but onely by the diſpoſition of their organs: for whereas Reaſon is an univerſal inſtrument which may ſerve in all kinde of encounters, theſe organs have need of ſome particular diſpoſition for every particular action: whence it is, that its morally impoſſible for one Machine to have ſeverall organs enough to make it move in all the occurrences of this life, in the ſame manner as our Reaſon makes us move. Now by theſe two means

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we may alſo know the difference which is between Men and Beaſts: For 'tis a very remarkable thing, that there are no men ſo dull and ſo ſtupid, without excepting thoſe who are out of their wits, but are capable to rank ſeverall words together, and of them to compoſe a Diſcourſe, by which they make known their thoughts: and that on the contrary, there is no other creature, how perfect or happily ſoever brought forth, which can do the like. The which happens, not becauſe they want organs; for we know, that Pyes and Parrots can utter words even as we can, and yet cannot ſpeak like us; that is to ſay, with evidence that they think what they ſay. Whereas Men, being born deaf and dumb, and deprived of thoſe organs which ſeem to make others ſpeak, as much or more then beaſts, uſually invent of themſelves to be underſtood by thoſe, who commonly being with them, have the leiſure to learn their expreſſions.

And

And this not onely witneſſeth, that Beaſts have leſſe reaſon than men, but that they have none at all. For we ſee there needs not much to learn to ſpeak: and foraſmuch as we obſerve inequality amongſt Beaſts of the ſame kind, aſwell as amongſt men, and that ſome are more eaſily managed then others; 'tis not to be believed, but that an Ape or a Parrot which were the moſt perfect of its kinde, ſhould therein equall the moſt ſtupid child, or at leaſt a child of a diſtracted brain, if their ſouls were not of a nature wholly different from ours. And we ought not to confound words with naturall motions, which witneſs paſſions, and may be imitated by Machines aſwell as by Animals; nor think (as ſome of the Ancients) that beaſts ſpeak, although we do not underſtand their language: for if it were true, ſince they have divers organs which relate to ours, they could aſwell make themſelves underſtood by us, as by their like. Its likewiſe very

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remarkable, that although there are divers creatures which expreſs more induſtry then we in ſome one of their actions; yet we may well perceive, that the ſame ſhew none at all in many others: So that what they do better then we, proves not at all that they have reaſon; for by that reckoning they would have more then any of us, and would do better in all other things; but rather, that they have none at all, and that its Nature onely which works in them according to the diſpoſition of their organs. As wee ſee a Clock, which is onely compoſed of wheels and ſprings, can reckon the hours, and meaſure the times more exactly then we can with all our prudence.

After this I had deſcribed the reaſonable Soul, and made it appear, that it could no ways be drawn from the power of the Matter, as other things whereof I had ſpoken; but that it ought to have been expreſly created: And how it ſuffiſeth not for it to be

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lodg'd in our humane body as a Pilot in his ſhip, to move its members onely; but alſo that its neceſſary it be joyned and united more ſtrongly therewith to have thoughts and appetites like ours, and ſo make a real man.

I have here dilated my ſelf a little on the ſubject of the Soul, by reaſon 't is of moſt importance; for, next the errour of thoſe who deny God, which I think I have already ſufficiently confuted, there is none which ſooner eſtrangeth feeble minds from the right way of vertue, then to imagine that the ſoul of beaſts is of the ſame nature as ours, and that conſequently we have nothing to fear nor hope after this life, no more then flies or ants. Whereas, when we know how different they are, we comprehend much better the reaſons which prove that ours is of a nature wholly independing from the body, and conſequently that it is not ſubject to die with it. And that when we ſee no other

other cauſe which deſtroys it, we are naturally thence moved to judge that it's immortall.

PART. VI.

ITs now three years ſince I ended the Treatiſe which contains all theſe things, and that I began to review it, to ſend it afterwards to the Preſſe, when I underſtood, that perſons to whom I ſubmit, and whoſe authority can no leſſe command my actions, then my own Reaſon doth my thoughts, had diſapproved an opinion in Phyſicks, publiſhed a little before by another; of which I will not ſay that I was, but that indeed I had obſerved nothing therein, before their cenſure, which I could have imagined prejudiciall either to Religion or the State; or conſequently,

which might have hindred me from writing the ſame, had my Reaſon perſwaded mee thereto. And this made me fear, leſt in the ſame manner there might be found ſome one amongſt mine, in which I might have been miſtaken; notwithſtanding the great care I always had to admit no new ones into my belief, of which I had not moſt certain demonſtrations; and not to write ſuch as might turn to the diſadvantage of any body. Which was ſufficient to oblige me to change my reſolution of publiſhing them. For although the reaſons for which I had firſt of all taken it, were very ſtrong; yet my inclination, which alwayes made me hate the trade of Book-making, preſently found me out others enough to excuſe my ſelf from it. And theſe reaſons on the one and other ſide are ſuch, that I am not only ſomewhat concern'd to ſpeak them; but happily the Publick alſo to know them.

I never did much eſteem thoſe things

things which proceeded from mine own brain; and ſo long as I have gathered no other fruits from the Method I uſe, but onely that I have ſatisfied my ſelf in ſome difficulties which belong to ſpeculative Sciences, or at leaſt endeavoured to regulate my Manners by the reaſons it taught me, I thought my ſelf not obliged to write any thing of them. For, as for what concerns Manners, every one abounds ſo much in his own ſenſe, That we may finde as many Reformers as heads, were it permitted to others, beſides thoſe whom God hath eſtabliſhed as Soveraigns over his people, or at leaſt, to whom he hath diſpenſed grace and zeal enough to be Prophets, to undertake the change of any thing therein. And although my Speculations did very much pleaſe me, I did beleeve that other men alſo had ſome, which perhaps pleas'd them more. But as ſoon as I had acquired ſome generall notions touching naturall Philoſophy,

and beginning to prove them in divers particular difficulties, I obſerved how far they might lead a man, and how far different they were from the principles which to this day are in uſe; I judg'd, that I could not keep them hid without highly ſinning againſt the Law, which obligeth us to procure, as much as in us lies, the general good of all men. For they made it appear to me, that it was poſſible to attain to points of knowledge, which may be very profitable for this life: and that in ſtead of this ſpeculative Philoſophy which is taught in the Schools, we might finde out a practicall one, by which knowing the force and workings of Fire, Water, Air, of the Starrs, of the Heavens, and of all other Bodies which environ us, diſtinctly, as we know the ſeveral trades of our Handicrafts, we might in the ſame manner employ them to all uſes to which they are fit, and ſo become maſters and poſſeſſours of Nature. Which is not onely to be deſired for

the invention of very many expedients of Arts, which without trouble might make us enjoy the fruits of the earth, and all the conveniencies which are to be found therein: But chiefly alſo for the preſervation of health, which (without doubt) is the firſt good, and the foundation of all other good things in this life. For even the minde depends ſo much on the temper and diſpoſition of the organs of the body, that if it be poſſible to finde any way of making men in the generall wiſer, and more able then formerly they were, I beleeve it ought to be ſought in Phyſick. True it is, that which is now in uſe contains but few things, whoſe benefit is very remarkable: But (without any deſigne of ſlighting of it) I aſſure my ſelf, there is none, even of their own profeſſion, but will conſent, that whatſoever is known therein, is almoſt nothing in compariſon of what remains to be known. And that we might be freed from very many diſeaſes, aſwell

of the body as of the mind, and even alſo perhaps from the weakneſſes of old age, had we but knowledge enough of their Cauſes, and of all the Remedies wherewith Nature hath furniſhed us. Now having a deſigne to employ all my life in the enquiry of ſo neceſſary a Science; and having found a way, the following of which me thinks might infallibly lead us to it, unleſs we be hindred by the ſhortneſs of life, or by defect of experiments. I judg'd that there was no better Remedie againſt thoſe two impediments, but faithfully to communicate to the publique, all that little I ſhould diſcover, and to invite all good Wits to endevour to advance farther in contributing every one, according to his inclination and power, to thoſe Experiments which are to be made, and communicating alſo to the publique all the things they ſhould learn; ſo that the laſt, beginning where the precedent ended, and ſo joyning the lives and labors of many in one, we

might

might all together advance further then any particular Man could do.

I alſo obſerv'd touching Experiments, that they are ſtill ſo much the more neceſſary, as we are more advanc'd in knowledg. For in the beginning it's better to uſe thoſe only which of themſelves are preſented to our ſenſes, and which we cannot be ignorant of, if we do but make the leaſt reflections upon them, then to ſeek out the rareſt and moſt ſtudied ones. The reaſon whereof is, that thoſe which are rareſt, doe often deceive, when we ſeldome know the ſame of the moſt common ones, and that the circumſtances on which they depend, are, as it were, always ſo particular, and ſo ſmall, that it's very uneaſie to finde them out. But the order I obſerved herein was this. Firſt, I endevoured to finde in generall the Principles or firſt Cauſes of whatſoever is or may be in the world, without conſidering any thing for this end, but God alone who created it, or

drawing them elſewhere, then from certain ſeeds of Truth which naturally are in our ſouls. After this, I examined what were the firſt and moſt ordinary Effects which might be deduced from theſe Cauſes: And me thinks that thereby I found out Heavens, Starrs, an Earth; and even on the Earth, Water, Air and Fire, Minerals, and ſome other ſuch like things, which are the moſt common, and the moſt ſimple of all, and conſequently the moſt eaſie to be underſtood. Afterwards, when I would deſcend to thoſe which were more particular, there were ſo many ſeverall ones preſented themſelves to me, that I did beleeve it impoſſible for a humane underſtanding to diſtinguiſh the forms and ſpecies of Bodies which are on the earth, from an infinite number of others which might be there, had it been the will of God ſo to place them: Nor by conſequence to apply them to our uſe, unleſs we ſet the Effects before the Cauſes, and

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make uſe of divers particular experiments; In relation to which, revolving in my minde all thoſe objects which ever were preſented to my ſenſes, I dare boldly ſay, I obſerved nothing which I could not fitly enough explain by the principles I had found. But I muſt alſo confeſſe that the power of Nature is ſo ample and vaſt, and theſe principles are ſo ſimple and generall, that I can obſerve almoſt no particular Effect, but that I preſently know it might be deduced from thence in many ſeverall ways: and that commonly my greateſt difficulty is to finde in which of theſe ways it depends thereon; for I know no other expedient for that, but again to ſeek ſome experiments, which may be ſuch, that their event may not be the ſame, if it be in one of thoſe ways which is to be expreſt, as if it were in another. In fine, I am gotten ſo far, That (me thinks) I ſee well enough what courſe we ought to hold to make the moſt part of thoſe experiments

riments which may tend to this effect. But I alſo ſee they are ſuch, and of ſo great a number, that neither my hands nor my eſtate (though I had a thouſand times more then I have) could ever ſuffice for all. So that according as I ſhall hereafter have conveniency to make more or fewer of them, I ſhall alſo advance more or leſſe in the knowledge of Nature, which I hop'd I ſhould make known by the Treatiſe which I had written; and therein ſo clearly ſhew the benefit which the Publick may receive thereby, that I ſhould oblige all thoſe in general who deſire the good of Mankinde; that is to ſay, all thoſe who are indeed vertuous, (and not ſo ſeemingly, or by opinion only) aſwell to communicate ſuch experiments as they have already made, as to help me in the enquiry of thoſe which are to be made.

But ſince that time, other reaſons have made me alter my opinion, and think that I truly ought to continue.

to write of all those things which I judg'd of any importance, according as I should discover the truth of them, and take the same care, as if I were to print them; as well that I might have so much the more occasion throughly to examine them; as without doubt, we always look more narrowly to what we offer to the publick view, then to what we compose onely for our own use: and oftentimes the same things which seemed true to me when I first conceived them, appear'd afterwards false to me, when I was committing them to paper: as also that I might lose no occasion of benefiting the Publick, if I were able, and that if my Writings were of any value, those to whose hands they should come after my death, might to make what use of them they think fit.

But that I ought not any wayes to consent that they should be published during my life; That neither the opposition and controversies, wherete perhap

perhaps they might be obnoxious, nor even the reputation whatſoever it were, which they might acquire me, might give me any occaſion of miſpending the time I had deſign'd to employ for my inſtruction; for although it be true that every Man is oblig'd to procure, as much as in him lies, the good of others; and that to be profitable to no body, is properly to be good for nothing: Yet it's as true, that our care ought to reach beyond the preſent time; and that it were good to omit thoſe things which might perhaps conduce to the benefit of thoſe who are alive, when our deſigne is, to doe others which ſhall prove farr more advantagious to our poſterity; As indeed I deſire it may be known that the little I have learnt hitherto, is almoſt nothing in compariſon of what I am ignorant of; and I doe not deſpair to be able to learn: For it's even the ſame with thoſe, who by little and little diſcover the truth in Learning; as with thoſe who begin-

ginning to grow rich, are leſs troubled to make great purchaſes, then they were before when they were poorer, to make little ones. Or elſe one may compare them to Generals of Armies, whoſe Forces uſually encreaſe proportionably to their Victories; and who have need of more conduct to maintain themſelves after the loſs of a battail, then after the gaining one, to take Towns and Provinces. For to endeavour to overcome all the difficulties and errours which hinder us to come to the knowledg of the Truth, is truly to fight battails. And to receive any falſe opinion touching a generall or weighty matter, is as much as to loſe one; there is far more dexterity required to recover our former condition, then to make great progreſſes where our Principles are already certain. For my part, if I formerly have diſcovered ſome Truths in Learning, as I hope my Diſcourſe will make it appear I have, I may ſay, they are but

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the products and dependances of five or six principall difficulties which I have overcome, and which I reckon for so many won Battails on my side. Neither will I forbear to say; That I think, It's only necessary for me to win two or three more such, wholly to perfect my design. And that I am not so old, but according to the ordinary course of Nature, I may have time enough to effect it. But I beleeve I am so much the more obliged to husband the rest of my time, as I have more hopes to employ it well; without doubt, I should have divers occasions of impeding it, should I publish the grounds of my Physicks. For although they are almost all so evident, that to beleeve them, it's needfull onely to understand them; and that there is none whereof I think my self unable to give demonstration. Yet because it's impossible that they should agree with all the severall opinions of other men, I foresee I should often be diverted by the

the oppoſition they would occaſion.

It may be objected, Theſe oppoſitions might be profitable, as well to make me know my faults, as if any thing of mine were good to make others by that means come to a better underſtanding thereof; and as many may ſee more then one man, beginning from this time to make uſe of my grounds, they might alſo help me with their inventions. But although I know my ſelf extremely ſubject to fail, and do never almoſt truſt my firſt thoughts; yet the experience I have of the objections which may be made unto me, hinder me from hoping for any profit from them; For I have often tried the judgments as well of thoſe whom I eſteem'd my friends, as of others whom I thought indifferent, and even alſo of ſome, whoſe malignity and envie did ſufficiently diſcover what the affection of my friends might hide. But it ſeldom happened that any thing was objected againſt me, which I had not altogether foreſeen,

ſeen, unleſs it were very remote from my Subject: So that I never almoſt met with any Cenſurer of my opinions, that ſeemed unto me either leſs rigorous, or leſs equitable then my ſelf. Neither did I ever obſerve, that by the diſputations practiſed in the Schools any Truth which was formerly unknown, was ever diſcovered. For whileſt every one ſeeks to overcome, men ſtrive more to maintain probabilities, then to weigh the reaſons on both ſides; and thoſe who for a long time have been good Advocates, are not therefore the better Judges afterwards.

As for the benefit which others may receive from the communication of my thoughts, it cannot alſo be very great, foraſmuch as I have not yet perfected them, but that it is neceſſary to add many things thereunto, before a uſefull application can be made of them. And I think I may ſay without vanity, That if there be any one capable thereof, it muſt be my

ſelf,

ſelf, rather then any other. Not but that there may be divers wits in the world incomparably better then mine; but becauſe men cannot ſo well conceive a thing and make it their own, when they learn it of another, as when they invent it themſelves: which is ſo true in this Subject, that although I have often explain'd ſome of my opinions to very underſtanding men, and who, whileſt I ſpake to them, ſeem'd very diſtinctly to conceive them; yet when they repeated them, I obſerv'd, that they chang'd them almoſt always in ſuch a manner, that I could no longer own them for mine. Upon which occaſion, I ſhall gladly here deſire thoſe who come after me, never to beleeve thoſe things which may be delivered to them for mine, when I have not publiſhed them my ſelf. And I do not at all wonder at the extravagancies which are attributed to all thoſe ancient Philoſophers, whoſe Writings we have not; neither do I

thereby judge, that their thoughts were very irrationall, seeing they were the best Wits of their time; but onely that they have been ill convey'd to us: as it appears also, that never any of their followers surpass'd them. And I assure my self, that the most passionate of those, who now follow *Aristotle*, would beleeve himself happy, had he but as much knowledge of Nature as he had, although it were on condition that he never might have more: They are like the ivie, which seeks to climb no higher then the trees which support it, and ever after tends downwards again when it hath attain'd to the height thereof: for, me thinks also, that such men sink downwards; that is to say, render themselves in some manner lesse knowing, then if they did abstain from studying; who being not content to know all which is intelligibly set down in their Authour, will besides that, finde out the solution of divers difficulties of which he

ſays nothing, and perhaps never thought of them: yet their way of Philoſophy is very fit for thoſe who have but mean capacities: For the obſcurity of the diſtinctions and principles which they uſe cauſeth them to ſpeak of all things as boldly, as if they knew them, and maintain all which they ſay, againſt the moſt ſubtill and moſt able; ſo that there is no means left to convince them. Wherein they ſeem like to a blinde man, who, to fight without diſadvantage againſt one that ſees, ſhould challenge him down into the bottom of a very dark cellar: And I may ſay, that it is theſe mens intereſt, that I ſhould abſtain from publiſhing the principles of the Philoſophy I uſe, for being moſt ſimple and moſt evident, as they are, I ſhould even do the ſame in publiſhing of them, as if I opened ſome windows, to let the day into this cellar, into which they go down to fight. But even the beſt Wits have no reaſon to wiſh for the knowledge of them: for

if they will be able to ſpeak of all things, and acquire the reputation of being learned, they will eaſily attain to it by contenting themſelves with probability, which without much trouble may be found in all kinde of matters; then in ſeeking the Truth, which diſcovers it ſelf but by little and little, in ſome few things; and which, when we are to ſpeak of others, oblige us freely to confeſſe our ignorance of them. But if they prefer the knowledge of ſome few truths to the vanity of ſeeming to be ignorant of nothing, as without doubt they ought to do, and will undertake a deſigne like mine, I need not tell them any more for this purpoſe, but what I have already ſaid in this Diſcourſe: For if they have a capacity to advance farther then I have done, they may with greater conſequence finde out of themſelves whatſoever I think I have found; Foraſmuch as having never examined any thing but by order, it's certain

tain, that what remains yet for me to diſcover, is in it ſelf more difficult and more hid, then what I have already here before met with; and they would receive much leſſe ſatiſfaction in learning it from me, then from themſelves. Beſides that, the habit which they would get by ſeeking firſt of all the eaſie things, and paſſing by degrees to others more difficult, will be more uſefull to them, then all my inſtructions. As I for my part am perſwaded, that had I been taught from my youth all the Truths whoſe demonſtrations I have diſcovered ſince, and had taken no pains to learn them, perhaps I ſhould never have known any other, or at leaſt, I ſhould never have acquired that habit, and that faculty which I think I have, ſtill to finde out new ones, as I apply my ſelf to the ſearch of them. And in a word, if there be in the world any work which cannot be ſo well ended by any other, as by the ſame who began it, it's that which I am now about.

It's true, That one man will not be ſufficient to make all the experiments which may conduce thereunto: But withall, he cannot profitably imploy other hands then his own, unleſſe it be thoſe of Artiſts, or others whom he hires, and whom the hope of profit (which is a very powerfull motive) might cauſe exactly to do all thoſe things he ſhould appoint them: For as for voluntary perſons, who by curioſity or a deſire to learn, would perhaps offer themſelves to his help, beſides that commonly they promiſe more then they perform, and make onely fair propoſitions, whereof none ever ſucceeds, they would infallibly be paid by the ſolution of ſome difficulties, or at leaſt by complements and unprofitable entertainments, which could not coſt him ſo little of his time, but he would be a loſer thereby. And for the Experiments which others have already made, although they would even communicate them to him, (which thoſe who call them Secrets

crets would never do,) they are for the moſt part compoſed of ſo many circumſtances, or ſuperfluous ingredients, that it would be very hard for him to decypher the truth of them: Beſides, he would find them all ſo ill expreſt, or elſe ſo falſe, by reaſon that thoſe who made them have laboured to make them appear conformable to their principles; that if there were any which ſerved their turn, they could not at leaſt be worth the while which muſt be imployed in the choice of them. So that, if there were any in the world that were certainly known to be capable of finding out the greateſt things, and the moſt profitable for the Publick which could be, and that other men would therefore labour alwayes to aſſiſt him to accompliſh his Deſignes; I do not conceive that they could do more for him, then furniſh the expence of the experiments whereof he ſtood in need; and beſides take care only that he may not be by any body hindred

of his time. But beſides that, I do not preſume ſo much of my Self, as to promiſe any thing extraordinary, neither do I feed my ſelf with ſuch vain hopes, as to imagine that the Publick ſhould much intereſſe it ſelf in my deſignes; I have not ſo baſe a minde, as to accept of any favour whatſoever, which might be thought I had not deſerved.

All theſe conſiderations joyned together, were the cauſe three years ſince why I would not divulge the Treatiſe I had in hand; and which is more, that I reſolved to publiſh none whileſt I lived, which might be ſo general, as that the Grounds of my Philoſophy might be underſtood thereby. But ſince, there hath been two other reaſons have obliged me to put forth ſome particular Eſſays, and to give the Publick ſome account of my Actions and Deſignes. The firſt was, that if I failed therein, divers who knew the intention I formerly had to print ſome of my Writings, might imagine

imagine that the cauſes for which I forbore it, might be more to my diſadvantage then they are. For although I do not affect glory in exceſs; or even, (if I may ſo ſpeak) that I hate it, as far as I judge it contrary to my reſt, which I eſteem above all things: Yet alſo did I never ſeek to hide my actions as crimes, neither have I been very wary to keep my ſelf unknown; as well becauſe I thought I might wrong my ſelf, as that it might in ſome manner diſquiet me, which would again have been contrary to the perfect repoſe of my minde which I ſeek. And becauſe having alwayes kept my ſelf indifferent, caring not whether I were known or no, I could not chuſe but get ſome kinde of reputation, I thought that I ought to do my beſt to hinder it at leaſt from being ill. The other reaſon which obliged me to write this, is, that obſerving every day more and more the deſigne I have to inſtruct my ſelf, retarded by reaſon of an infinite number

ber of experiments which are needful to me, and which its impoſſible for me to make without the help of others; although I do not ſo much flatter my ſelf, as to hope that the Publick, ſhares much in my concernments; yet will I not alſo be ſo much wanting to my ſelf, as to give any cauſe to thoſe who ſhall ſurvive me, to reproach this, one day to me, That I could have left them divers things far beyond what I have done, had I not too much neglected to make them underſtand wherein they might contribute to my deſigne.

And I thought it eaſie for me to chooſe ſome matters, which being not ſubject to many Controverſies, nor obliging me to declare any more of my Principles then I would willingly, would nevertheleſſe expreſſe clearly enough, what my abilities or defects are in the Sciences. Wherein I cannot ſay whether I have ſucceeded or no; neither will I prevent the judgment of any man by ſpeaking of my own

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Writings: but I ſhould be glad they might be examin'd; and to that end I beſeech all thoſe who have any objections to make, to take the pains to ſend them to my Stationer, that I being advertiſed by him, may endeavour at the ſame time to adjoyn my Anſwer thereunto: and by that means, the Reader ſeeing both the one and the other, may the more eaſily judge of the Truth. For I promiſe, that I will never make any long Anſwers, but only very freely confeſſe my own faults, if I find them; or if I cannot diſcover them, plainly ſay what I ſhal think requiſite in defence of what I have writ, without adding the explanation of any new matter, that I may not endleſſy engage my ſelf out of one into another.

Now if there be any whereof I have ſpoken in the beginning, of the Opticks and of the Meteors, which at firſt jarr, by reaſon that I call them Suppoſitions, and that I ſeem not willing to prove them; let a man have but the patience

tience to read the whole attentively, and I hope he will reſt ſatisfied: For (me thinks) the reaſons follow each other ſo cloſely, that as the later are demonſtrated by the former, which are their Cauſes; the former are reciprocally proved by the later, which are their Effects. And no man can imagine that I herein commit the fault which the Logicians call a *Circle*; for experience rendring the greateſt part of theſe effects moſt certain, the cauſes whence I deduce them ſerve not ſo much to prove, as to explain them; but on the contrary, they are thoſe which are proved by them. Neither named I them Suppoſitions, that it might be known that I conceive my ſelf able todeduce them from thoſe firſt Truths which I have before diſcovered: But that I would not expreſly do it to croſſe certain ſpirits, who imagine that they know in a day al what another may have thought in twenty yeers, as ſoon as he hath told them but two or three words;

and

and who are so much the more subject to erre, and less capable of the Truth, as they are more quick and penetrating) from taking occasion of erecting some extravagant Philosophy on what they may beleeve to be my Principles, and lest the fault should be attributed to me. For as for those opinions which are wholly mine, I excuse them not as being new, because that if the reasons of them be seriously considered, I assure my self, they will be found so plain, and so agreeable to common sense, that they will seem less extraordinary and strange then any other which may be held on the same Subjects. Neither do I boast that I am the first Inventor of any of them; but of this indeed, that I never admitted any of them, neither because they had, or had not been said by others, but only because Reason perswaded me to them.

If Mechanicks cannot so soon put in practise the Invention which is set forth in the Opticks, I beleeve that therefore

therefore men ought not to condemn it; foraſmuch as skill and practice are neceſſary for the making and compleating the Machines I have deſcribed; ſo that no circumſtrance ſhould be wanting. I ſhould no leſs wonder if they ſhould ſucceed at firſt triall, then if a man ſhould learn in a day to play excellently well on a Lute, by having an exact piece ſet before him. And if I write in French, which is the language of my Country, rather then in Latin, which is that of my Tutors, 'tis becauſe I hope ſuch who uſe their meer naturall reaſon, wil better judge of my opinions, then thoſe who only beleeve in old Books. And for thoſe who joyn a right underſtanding with ſtudy, (who I only wiſh for my Judges) I aſſure my ſelf, they will not be ſo partiall to the Latin, as to refuſe to read my reaſons becauſe I expreſſe them in a vulgar tongue.

To conclude, I will not ſpeak here in particular of the progreſſe I hoped to make hereafter in Learning; Nor

engage

engage my ſelf by any promiſe to the Publick, which I am not certain to perform. But I ſhall onely ſay, That I am reſolved to employ the remainder of my life in no other thing but the ſtudy to acquire ſome ſuch knowledge of Nature as may furniſh us with more certain rules in Phyſick then we hitherto have had: And that my inclination drives me ſo ſtrongly from all other kind of deſignes, chiefly from thoſe which cannot be profitable to any, but by prejudicing others; that if any occaſion obliged me to ſpend my time therein, I ſhould beleeve I ſhould never ſucceed therein: which I here declare, though I well know it conduceth not to make me conſiderable in the world; neither is it my ambition to be ſo. And I ſhall eſteem my ſelf always more obliged to thoſe by whoſe favour I ſhal without diſturbance enjoy my eaſe, then to them who ſhould proffer me the moſt honourable imployment of the earth.

FINIS.